

## Synthetic Division and Factoring Worksheet

Use synthetic division to find the quotient and remainder.

1.  $(x^3 - x^2 + 2x + 4) \div (x - 2)$

2.  $(x^5 - 4x^3 + x) \div (x + 3)$

3.  $(-4x^3 + 2x^2 - x + 1) \div (x + 2)$

4.  $(5x^2 - 17x + 12) \div (x - 4)$

5.  $(x^4 + 5x^3 + 6x^2 - x - 2) \div (x + 2)$

6.  $(-x^3 + 2x^2 - 3x + 5) \div (x + 1)$

7. Determine whether 4 is a root of  $5x^3 - 6x^2 + 8$  using synthetic division.

Factor, if possible.

8.  $3x^2 + 17x - 6$

9.  $12x^2 - 7x - 12$

10.  $3b^2 - 13b + 4$

11.  $9z^2 + 3z + 2$

12.  $10t^2 + 11t + 3$

13.  $6b^2 - 19b + 15$

Numbers 14 and 15 are factorable. Use what you have learned to factor them, showing all work.

14.  $x^3 - 4x^2 - 11x + 30$

15.  $x^4 - 7x^3 - 70x^2 + 400x$